



# BKHD-1151NP-17-4L Motherboard

VER 1.0Y

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## Safety Guide

To ensure optimal use of Beikong products, please review the user manual in its entirety. Before reviewing product-specific information, we kindly request that you carefully read the safety instructions.

## Product Version Identification

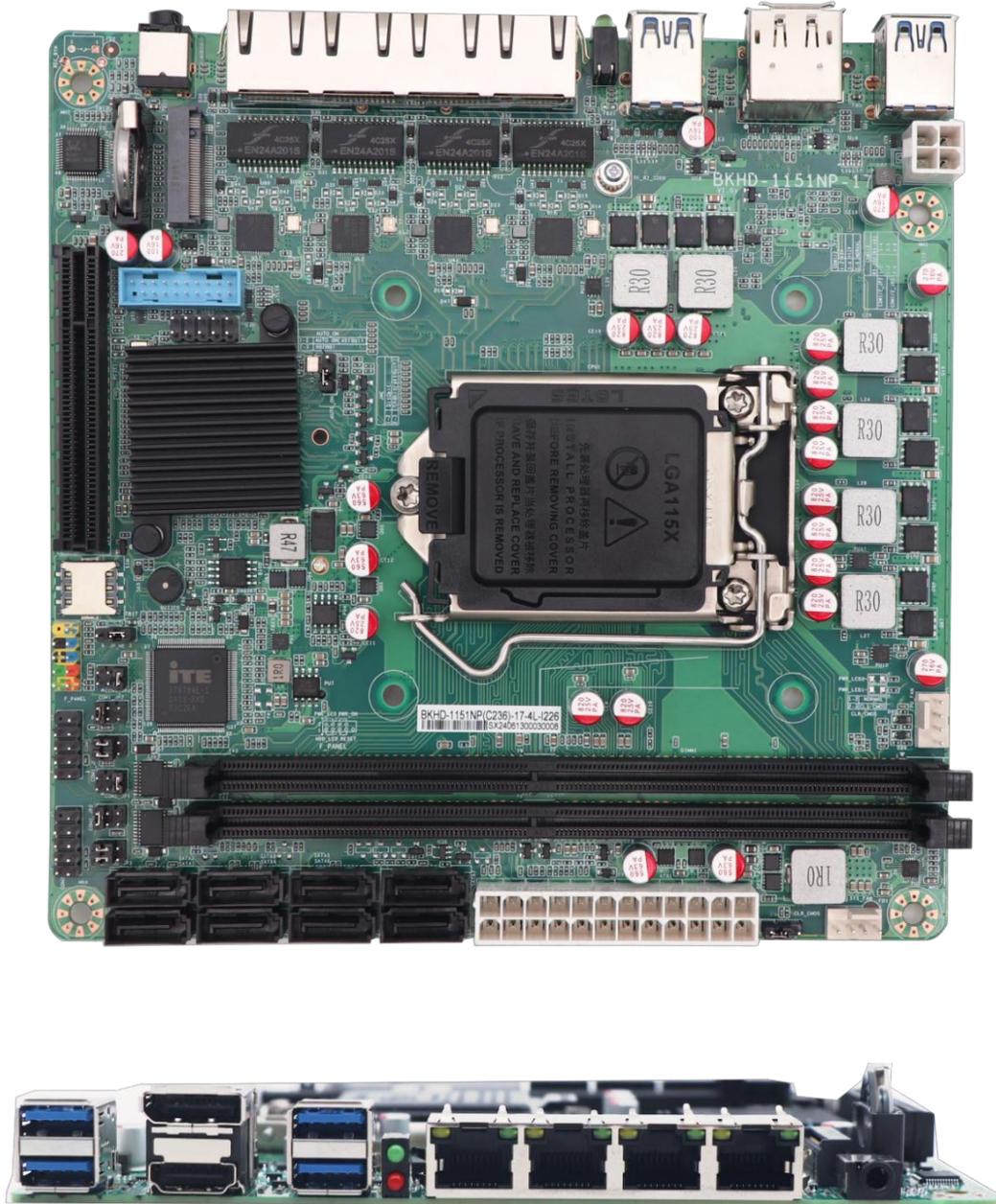
The product version number can be found on the motherboard, where X.X represents a number. For example, if the version is indicated as [VER1.0], it signifies that the current version of the motherboard is 1.0. The BIOS interface homepage provides information such as [XXXXNP-XXXX], which denotes the BIOS version number utilized by the current product. When updating the motherboard's BIOS, driver, or referencing other technical documents, please refer to the product version label for the most up-to-date information.

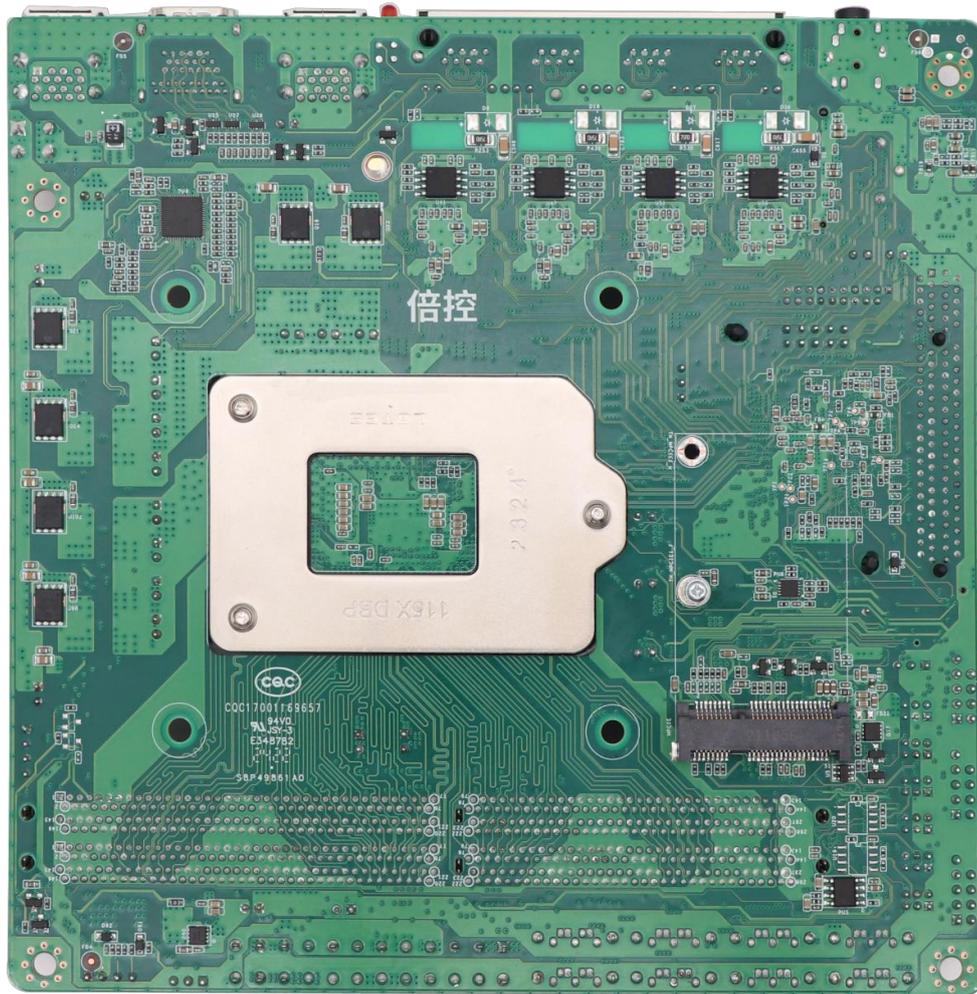
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## Product Images

Please be advised that products manufactured in different batches may exhibit slight variations in appearance. To ensure the most accurate representation, please refer to the actual received goods.





## Product Profile

The 1151NP-17-4L is a multi-network port Mini-ITX motherboard launched by Beikong Industrial Control. The product supports the LGA1151 socket and 6th to 9th generation Intel processors, and is suitable for multiple application scenarios such as NAS, firewalls and routers, IoT gateways, edge computing, and embedded systems.

### Key features:

Supports the LGA1151 architecture and 6th to 9th generation Intel Celeron/Pentium/Core processors, which can be flexibly selected as needed to meet the computing requirements of different tasks;

Equipped with four Intel i226 chips, it can provide network bandwidth of up to 2.5Gbps, which is suitable for application scenarios with high requirements for data transmission speed and network stability;

Supports dual-channel DDR4 DIMM memory, which provides higher memory bandwidth and performance and is suitable for application scenarios that require multitasking and high bandwidth;

It provides one NVMe SSD slot and eight SATA interfaces, supporting high-speed storage and large-capacity storage devices to meet various storage needs;

It provides one DP and HD interface, supporting high-definition video output, which can be displayed synchronously or asynchronously on multiple monitors, and is suitable for applications that require high-definition display;

The board size is 17\*17cm, which is suitable for installation in compact spaces and is widely used in various small systems and equipment.

## Motherboard Specifications

Item	Description
<b>Processor</b>	LGA1151 Socket Intel 6th to 9th Generation Celeron/Pentium/Core i3/i5/i7
<b>BIOS</b>	AMI BIOS (Legacy or UEFI)
<b>Memory</b>	2*DDR4 DIMM Memory slot, Up to 2*16GB (Depends on the processor)
<b>Display</b>	Integrated UHD Graphics; 1*DP port; 1*HD port
<b>Ethernet port</b>	4*Intel i226 2.5Gigabit Ethernet (Backward compatible with 10/100/1000Mbps)
<b>Storage</b>	1*M.2 NVMe 2280 (PCIe Gen3 x4; 8*SATA 6.0Gb/s (Support HDD/SSD)
<b>Expansion slot</b>	1*PCIe x8 Gen3; 1*Mini PCIe
<b>Plane I/O</b>	4*Ethernet port; 4*USB3.0; 1*DP; 1*HD; 1*Audio
<b>On-board I/O</b>	1*Set USB3.0 pins; 2*COM 9pins
	1*CPU fan 4-Pin; 1*SYS fan 4-Pin; 1*GPIO 8-Pin; 1*F_Panel Pins
<b>Power type</b>	ATX 24pin+4pin
<b>Operating Temperature</b>	-20°C to 55°C
<b>Operating Humidity</b>	0~90% Relative Humidity, No condensation
<b>PCB Size</b>	170mm*170mm

# Motherboard Installation

## Safety Note

- Please do not remove the serial number and agent warranty sticker from the motherboard prior to installation. Doing so may affect the product's warranty recognition standard.
- Prior to installing or removing the motherboard or other hardware devices, please ensure that the power is turned off and the power cord is unplugged from the socket.
- When installing additional hardware devices on the motherboard interfaces, please ensure that the connectors and sockets are securely fastened.
- When handling the motherboard, please avoid contact with the metal wiring components to prevent the risk of short circuits.
- It is recommended that an anti-static wrist strap be worn when handling the motherboard, central processing unit (CPU), or memory. In the absence of an anti-static wrist strap, it is advisable to ensure that your hands are dry and to touch a metal object first in order to eliminate static electricity.
- Before installing the motherboard, we kindly request that place it on an antistatic mat or in an antistatic bag.
- Make sure the power adapter is turned off before unplugging the motherboard power connector.
- Before turning on the power, make sure the voltage of the adapter is within the standard voltage range.
- Before turning on the power, make sure all hardware device cables and power cords are properly connected.
- Do not allow the fixing screws to collide with the circuits or parts on the motherboard to avoid damage or malfunction of the motherboard.
- Make sure there are no loose screws or metal parts on the motherboard or inside the computer case before using the unit.
- Please secure the computer host in a stable location before starting the device.
- To prevent system failure, do not place the unit in an environment where the temperature is excessive.
- Turning on the power before installation is complete may damage the motherboard, other equipment, or yourself.
- If you are unfamiliar with how to perform the installation, or if you have any technical problems using this product, please contact a professional technician.

## Memory Installation

The motherboard provides 2\*DDR4 DIMM memory slots.



### **Before installing memory:**

1. Please confirm that the memory you purchased is compatible with the specifications supported by this motherboard.
2. Before installing or removing the memory, please make sure that the power of the computer is turned off to avoid damage.
3. The memory design has a foolproof mark. If you insert the memory in the wrong direction, the memory cannot be installed. Please change the direction.

### **When installing memory:**

1. Before installing or removing memory, please turn off the power and unplug the power cord.
2. Carefully hold the two ends of the Memory Stick and do not touch the metal contacts on the Memory Stick.
3. Align the metal contacts of the memory with the memory slot, making sure that the concave hole is aligned with the convex point of the upper slot.
4. Insert the memory into the slot at an angle of 30 degrees, then press the Memory Stick down until you hear a "click," indicating that the memory has been successfully installed and is ready to use. (Note: Do not press the Memory Stick too hard to avoid damaging the memory).
5. To remove the Memory Stick, push out the tabs at both ends of the memory slot simultaneously, and then remove the Memory Stick.

### **To remove the memory:**

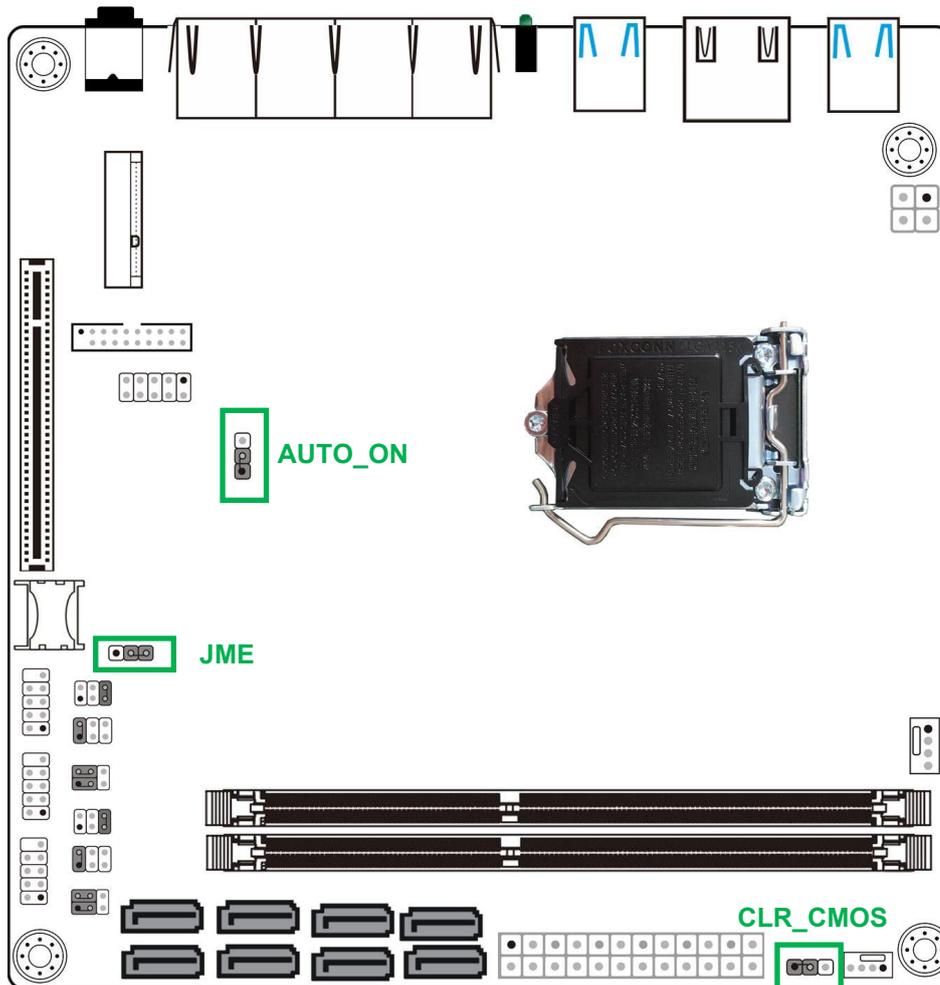
Use two fingers to push the latches at either end of the slot outward, the memory will pop up, then remove the memory.

## Jumper Setting

Before installing the hardware device, you can set the corresponding jumpers according to your needs based on the following table.

### To identify the first pin of a jumper or connector

Look at the marking next to the jumper or connector. The triangle symbol "▲" or "1" or a bold line indicates the first pin; check the pad on the back of the motherboard. The square pad is the first pin. When connecting the connector to the device, be careful to distinguish the first pin. Mixing the pins will damage the motherboard.



CLR\_CMOS

CLR_CMOS	PIN	Definition
	1-2	Normal (Default)
	2-3	Restore to factory defaults

JME Jumper Settings

JME	PIN	Definition
	1-2	ME
	2-3	Normal (Default)

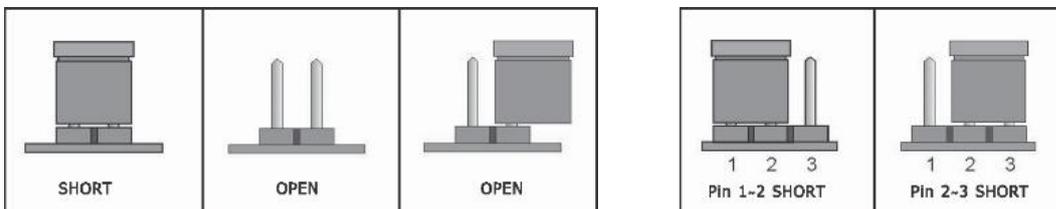
AUTO\_ON Jumper Setting

AUTO_ON	PIN	Definition
	1-2	Automatic turn on (Default)
	2-3	Normal

## Jumper Description

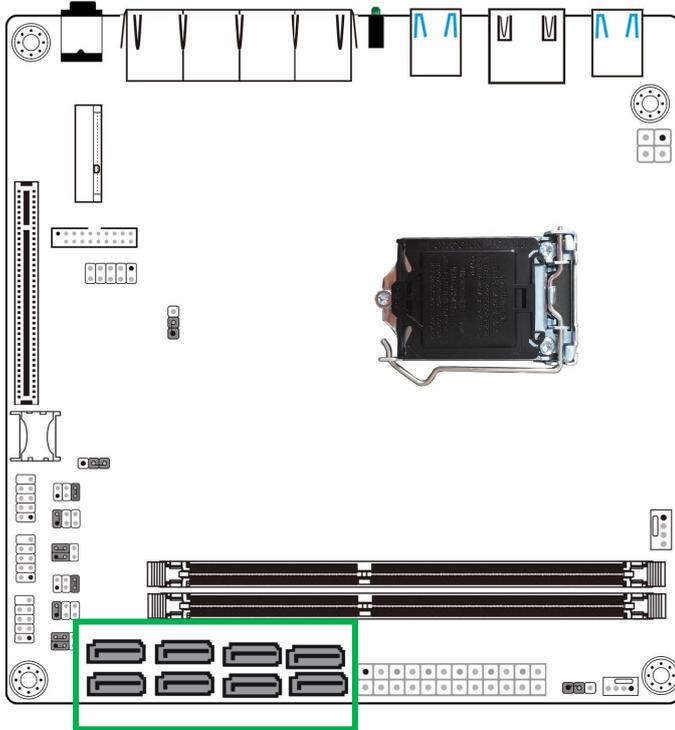
**2-pin headers:** Insert a jumper cap into both pins turns them off (short).

**3-pin headers:** Insert a jumper cap into pins 1-2 or pins 2-3 to off (short) them.



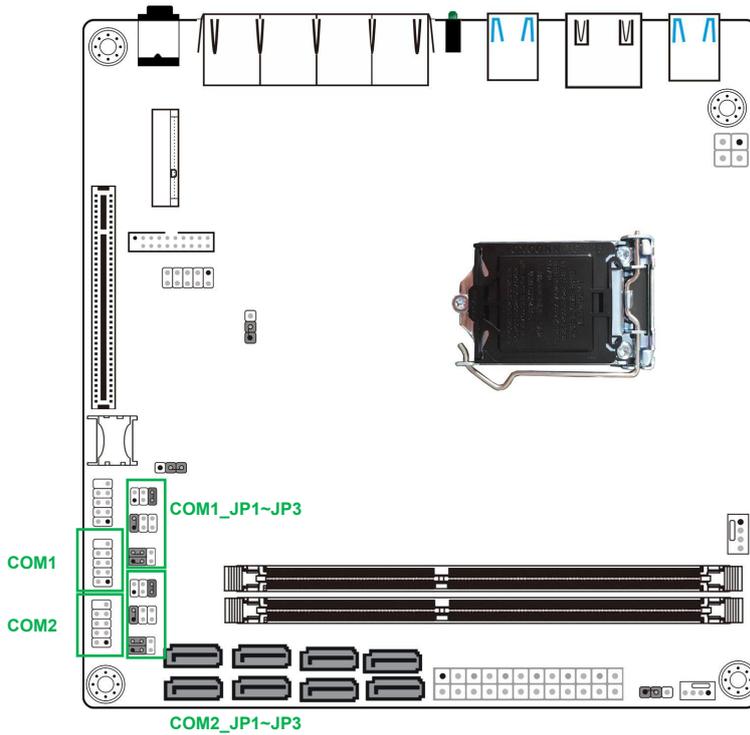
## Motherboard Pin Definition

### SATA interface.



SATA	PIN	Definition	PIN	Definition
	1	GND	5	SATA_RXN
	2	SATA_TXP	6	SATA_RXP
	3	SATA_TXN	7	GND
	4	GND		

## Serial Port (COM)



COM1/COM2 (2\*5-pin, 2.54mm pitch, 10th pin empty) (RS232)

COM 1/2	PIN	Definition	PIN	Definition
	1	DCD#	2	RDX
	3	TXD	4	DTR#
	5	GND	6	DSR#
	7	RTS#	8	CTS#
	9	RI#	10	

COM1/COM2 (2\*5-pin, 2.54mm pitch, 10th pin empty) (RS485)

COM 1/2	PIN	Definition	PIN	Definition
	1	DATA-	2	DATA+
	3	N/C	4	N/C
	5	GND	6	N/C
	7	N/C	8	N/C
	9	N/C	10	

COM1/COM2\_JP1 (2\*3-pin, 2.00mm pitch)

COM 1/2_JP1	PIN	Definition
	1-2	+5V
	3-4	+12V
	5-6	Normal (default)

COM1/COM2\_JP2 (2\*3-pin, 2.00mm pitch)

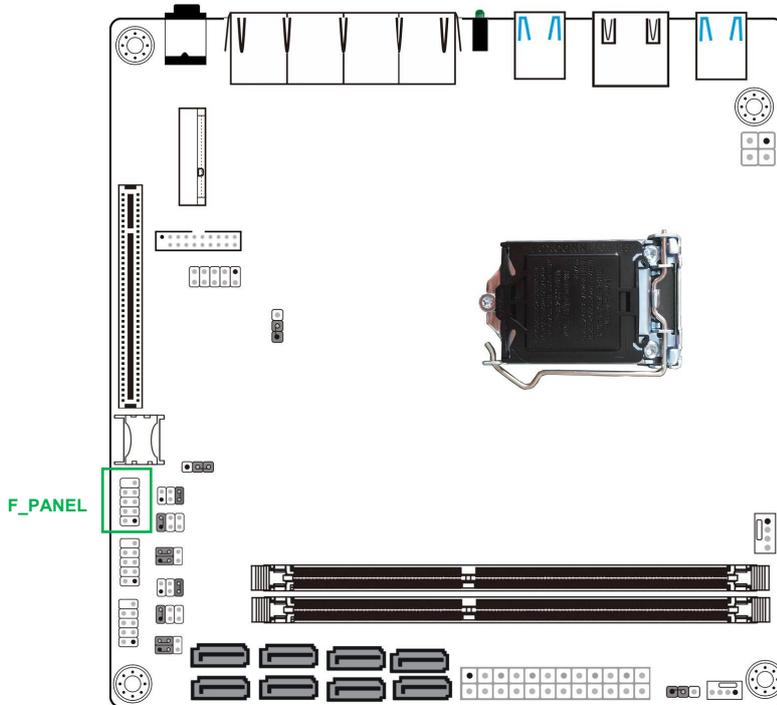
COM 1/2_JP2	PIN	Definition
	1-2	RS-232
	3-4	RS-485

COM1/COM2\_JP3 (2\*3-pin, 2.00mm pitch)

COM 1/2_JP3	PIN	Definition
	1-3 2-4(default)	RS-232
	3-5 4-6	RS-485

## Front panel interface

The 9-pin header includes power-on, reset, hard disk indicator, and power indicator, allowing the user to connect the system's front panel switch function.



F\_PANEL (2\*5-pin, 2.54mm pitch, 10th pin is empty)

F_PANEL	PIN	Definition	PIN	Definition
	1	HDD_LED+	2	PWR_LED+
	3	HDD_LED-	4	GND
	5	GND	6	PWR_ON
	7	RESET	8	GND
	9	GND	10	

Hard disk indicator (pins 1 and 3 HDD\_LED, pin 1 is the positive pole of the LED) When the hard disk is performing read and write operations, the indicator light will flash, indicating that the hard disk is running.

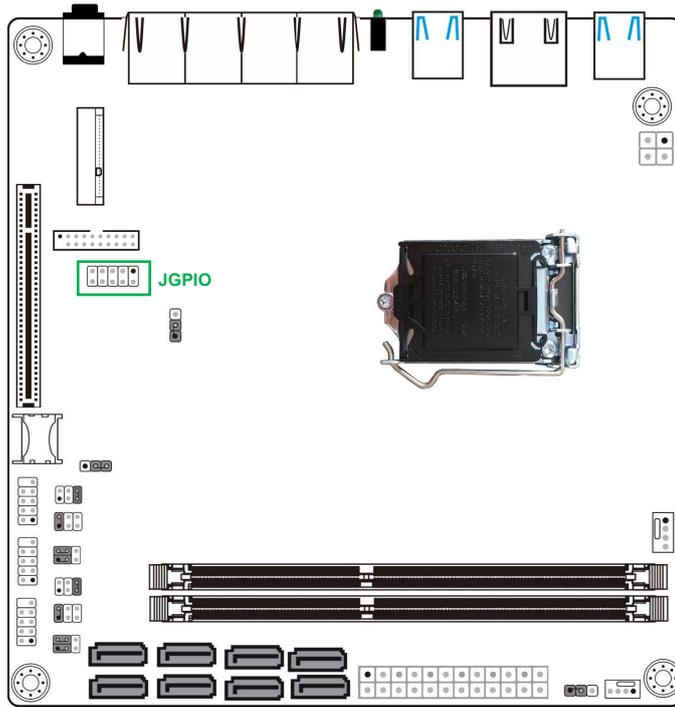
Power indicator (pins 2 and 4 POWER\_LED, pin 2 is the positive pole of the LED), when the system is powered on, the power indicator light is on; when the system is powered off, the power indicator light is off.

Reset button (pins 5 and 7 RESET\_BUTTON) When the system fails and cannot continue to work, resetting can make the system start working again.

Power switch control (pins 6 and 8 POWER\_BUTTON) These two pins are connected to the bounce switch on the front panel of the chassis, which can be used to turn the power on or off.

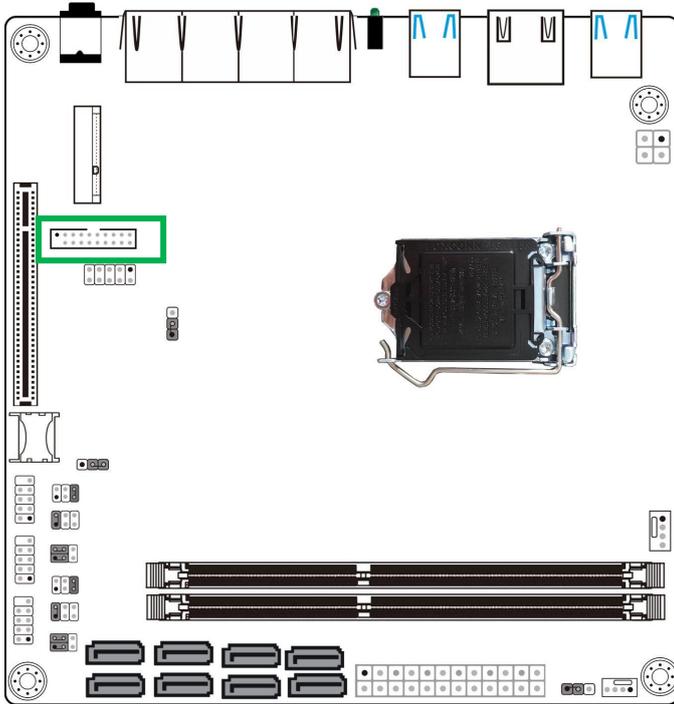
## Programmable input and output port (JGPIO)

JGPIO (2\*5-pin, 2.54mm pitch with external enclosure)



JGPIO	PIN	Definition	PIN	Definition
	1	GND	2	VCC
	3	GP70	4	GP71
	5	GP72	6	GP73
	7	GP74	8	GP75
	9	GP76	10	GP77

## USB3 expansion pin (F\_USB3)

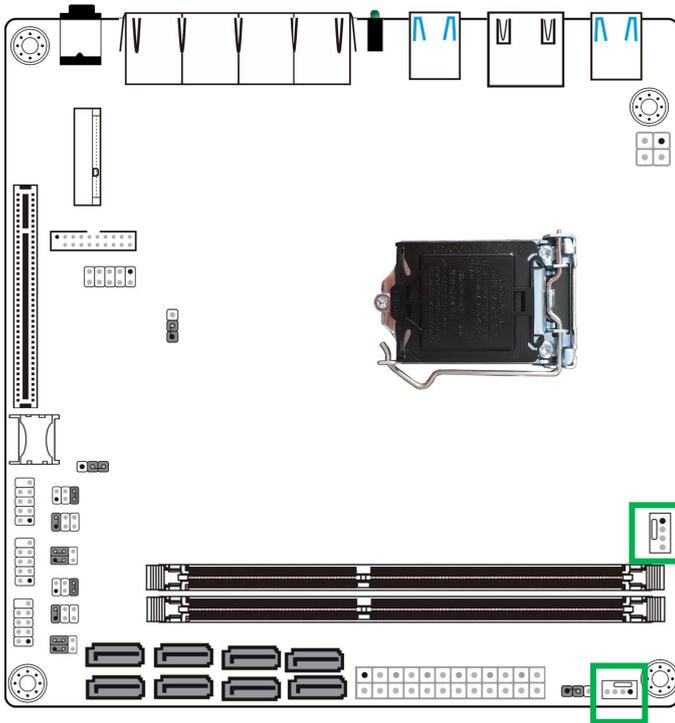


Before connecting the USB expansion panel, be sure to turn off the computer power and unplug the power cord from the socket to avoid damaging the USB expansion panel.

F\_USB3 (2\*10-pin, 2.00mm pitch, 2nd pin empty)

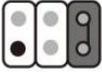
F_USB3	PIN	Definition	PIN	Definition
	1	+5V	2	
	3	Rx1-	4	+5V
	5	Rx1+	6	Rx2-
	7	GND	8	Rx2+
	9	Tx1-	10	GND
	11	Tx1+	12	Tx2-
	13	GND	14	Tx2+
	15	USB1_DATA-	16	GND
	17	USB1_DATA+	18	USB2_DATA-
	19	N/C	20	USB2_DATA+

## Fan connector (CPU\_FAN, SYS\_FAN)

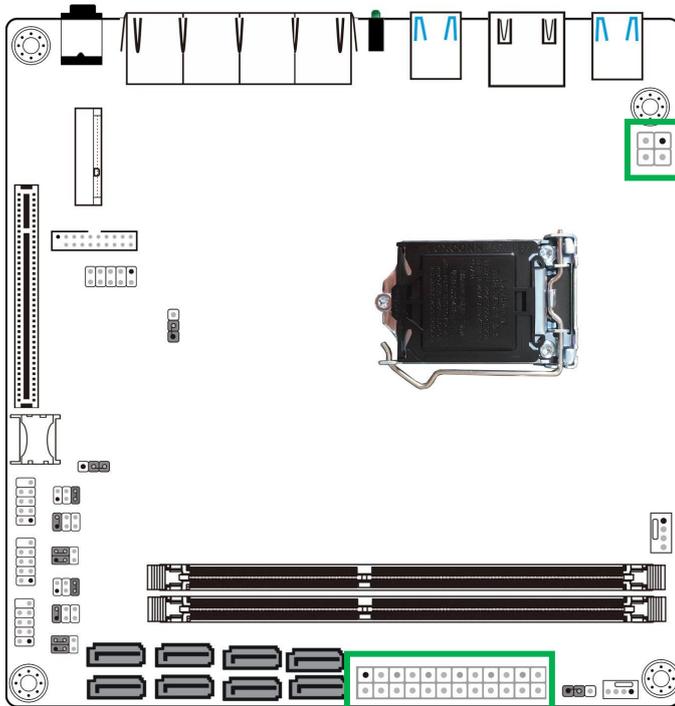


The cooling fan power socket of the motherboard is 1\*4-pin. The power sockets are all designed to prevent fooling around. Please pay attention to the direction when installing (the black wire is the ground wire).

CPU\_FAN, SYS\_FAN (1\*4-pins 2.54mm pitch, half back)

CPU/SYS_FAN	PIN	Definition
	1	GND
	2	+12V
	3	FAN_TAC
	4	FAN_PWM

## Power socket (ATX powered)



The power socket allows the power supply to provide sufficient and stable power to all components on the motherboard. Before plugging into the power outlet, please make sure the power supply is turned off and all devices are installed correctly. The power socket has a fool-proof design, just confirm the correct direction and plug it in.

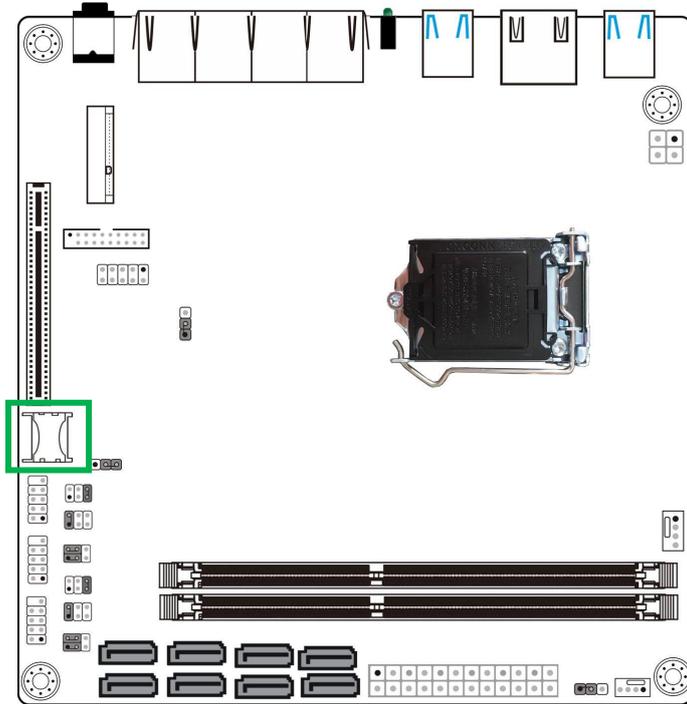
ATX1 (2\*2-pin with transparent outer enclosure)

ATX1	PIN	Definition
	1	GND
	2	GND
	3	+12V
	4	+12V

ATX2 (2\*12 pin with transparent outer enclosure)

ATX2	PIN	Definition	PIN	Definition
	1	+3.3V	2	+3.3V
	3	GND	4	+5V
	5	GND	6	+5V
	7	GND	8	PW_OK
	9	+V5SB	10	+12V
	11	+12V	12	+3.3V
	13	+3.3V	14	-12V
	15	GND	16	PS_ON
	17	GND	18	GND
	19	GND	20	N/A
	21	+5V	22	+5V
	23	+5V	24	GND

## SIM card slot (SIMB)



Note: When installing the SIM card, place the chip down (the metal contacts are in contact with the motherboard).

**You will need to install an additional LTE or 5G module for the motherboard to connect to the cellular network using the SIM card.**

## BIOS User Guide

This motherboard uses AMI BIOS. BIOS stands for Basic Input Output System. It is a set of programs stored on a ROM chip on the computer's motherboard. It stores the computer's most important basic I/O programs, the power-on self-test program, and the system startup program. It can read and write specific information about system settings from the CMOS. Its primary function is to provide the most basic and immediate hardware settings and control for the computer.

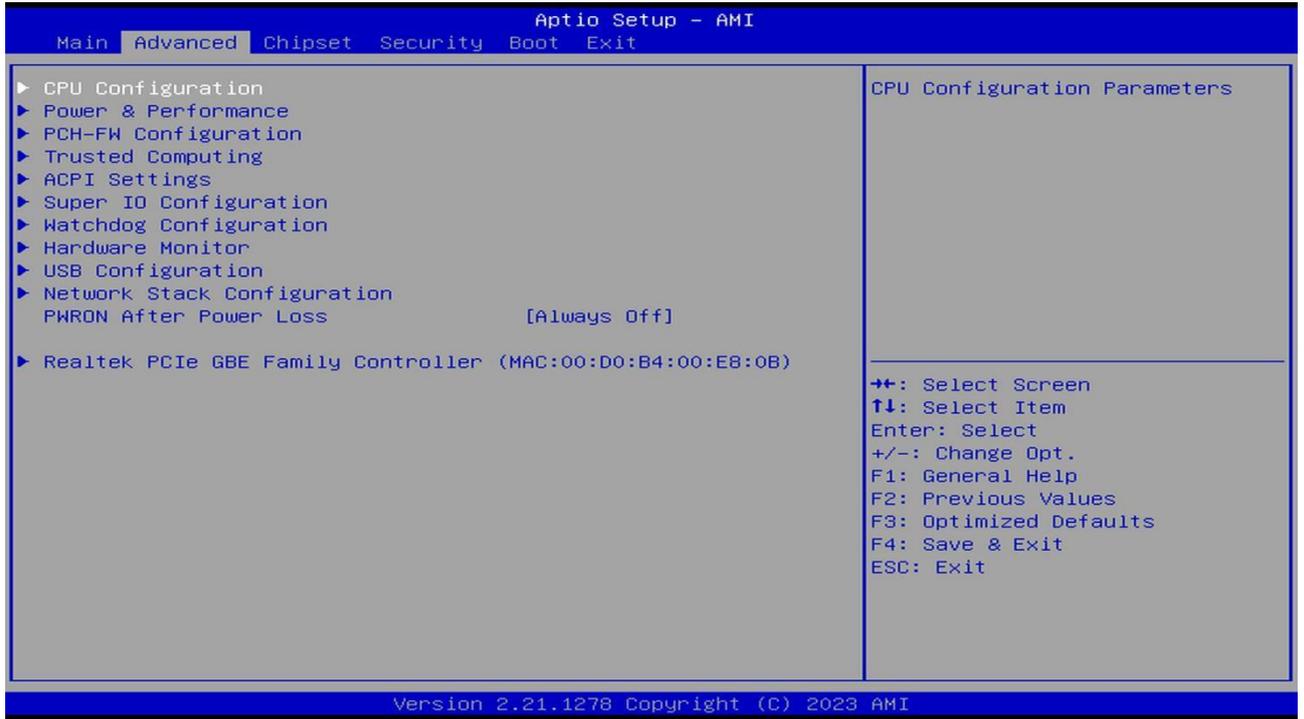
Note: Because the BIOS version of the motherboard is constantly updated, the BIOS information in this manual is for reference only.

When the computer starts, the BIOS enters the power-on self-test (post) program. The self-test program is a series of diagnostic programs built into the BIOS. When the self-test program is complete, the following message appears: Press DEL to run Setup

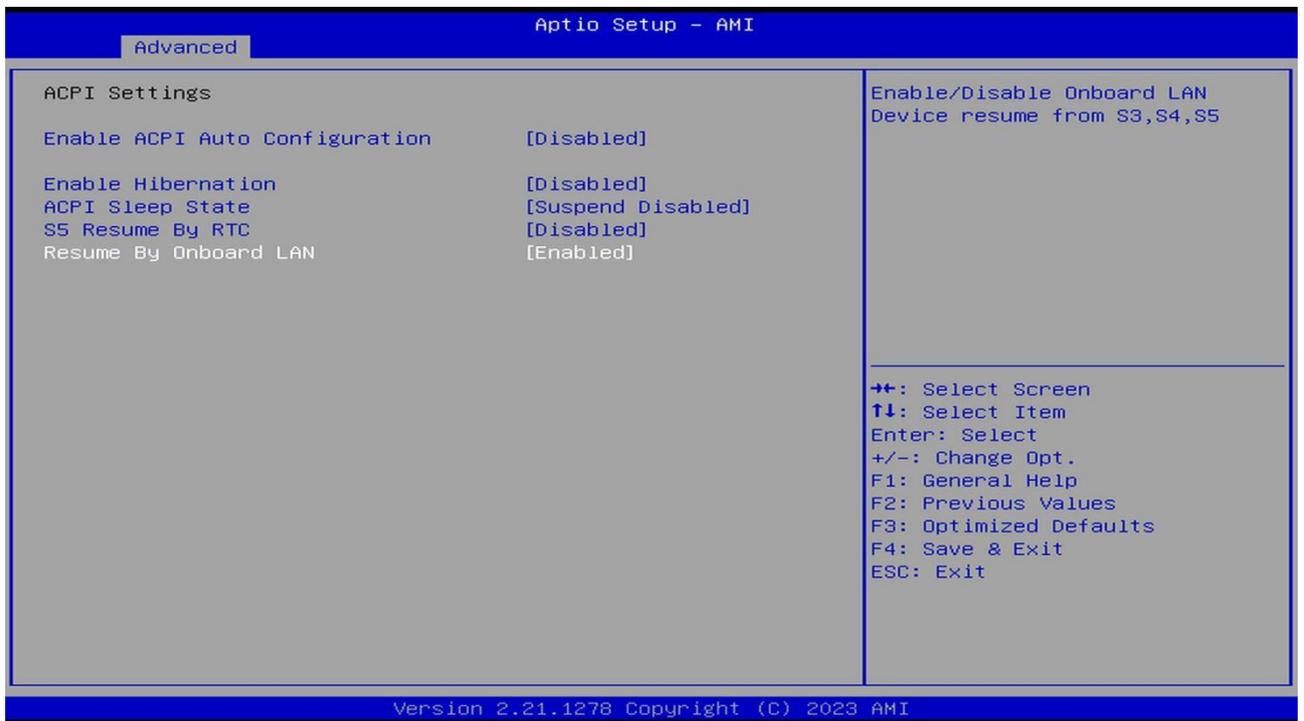
If this message disappears before you respond, you can press <Ctrl> + <Alt> + <Del> at the same time to restart the computer, or shut down and then restart the computer, or press the power button on the case to restart the computer.

- Use the <↑><↓><←><→> arrow keys to move the item you want to change
- Press the <Enter> key to enter the sub-interface of the item.
- Use the <Enter> key to select the item to be changed and press the <Enter> key to change it.
- <Page Up/+>Increase value or change
- <Page Down/->Decrease value or change
- <F1>Set submenu help
- <F3>Set to default value (restore factory settings)
- <F4>Save BIOS settings

## Advanced Settings

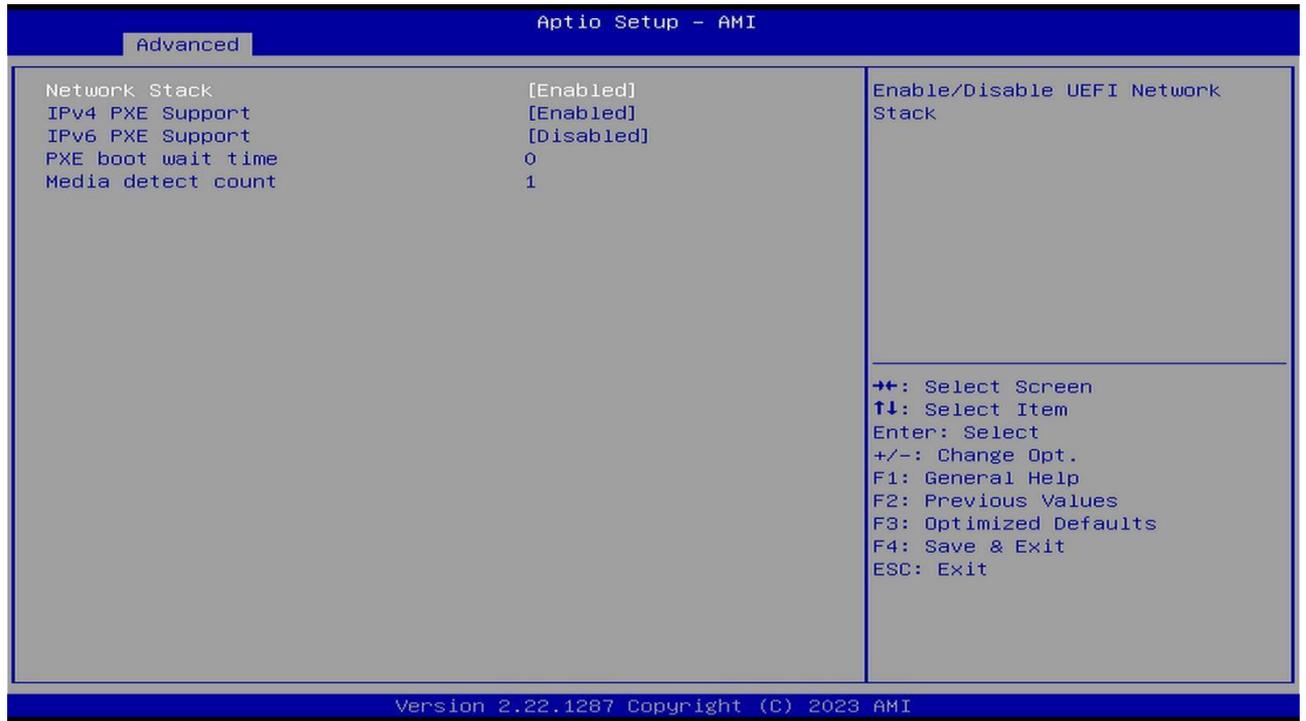


## ACPI Settings



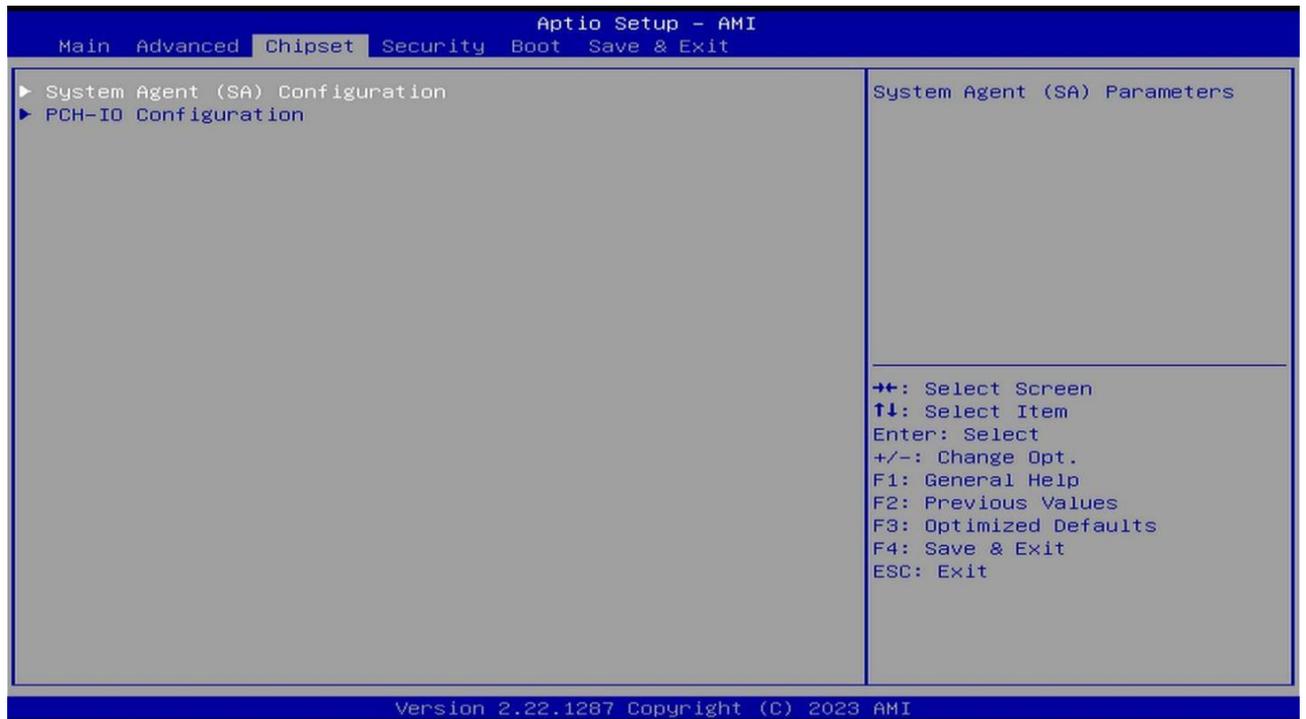
[Resume By onboard LAN] This option is used to set up Wake-up on LAN.

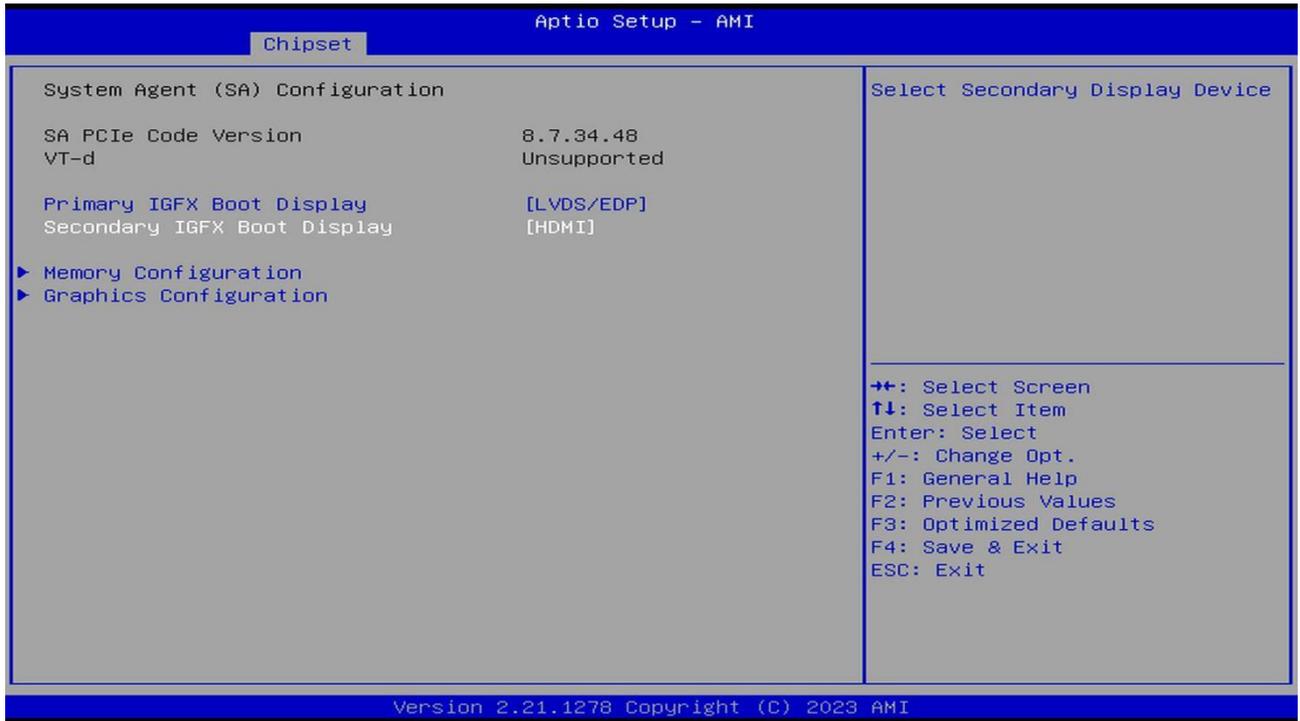
## Network Stack Settings



[IPv4 PXE Support] This option is used to set up Wake on LAN.

## Chipset Settings

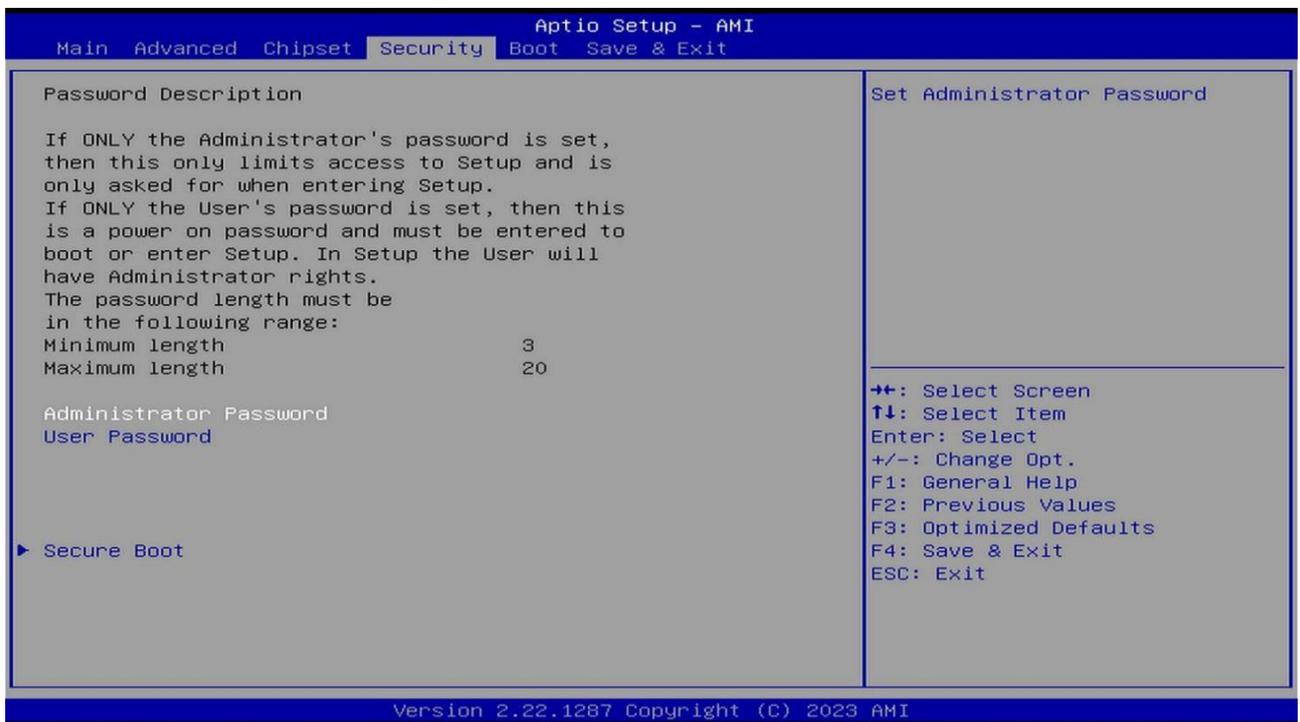




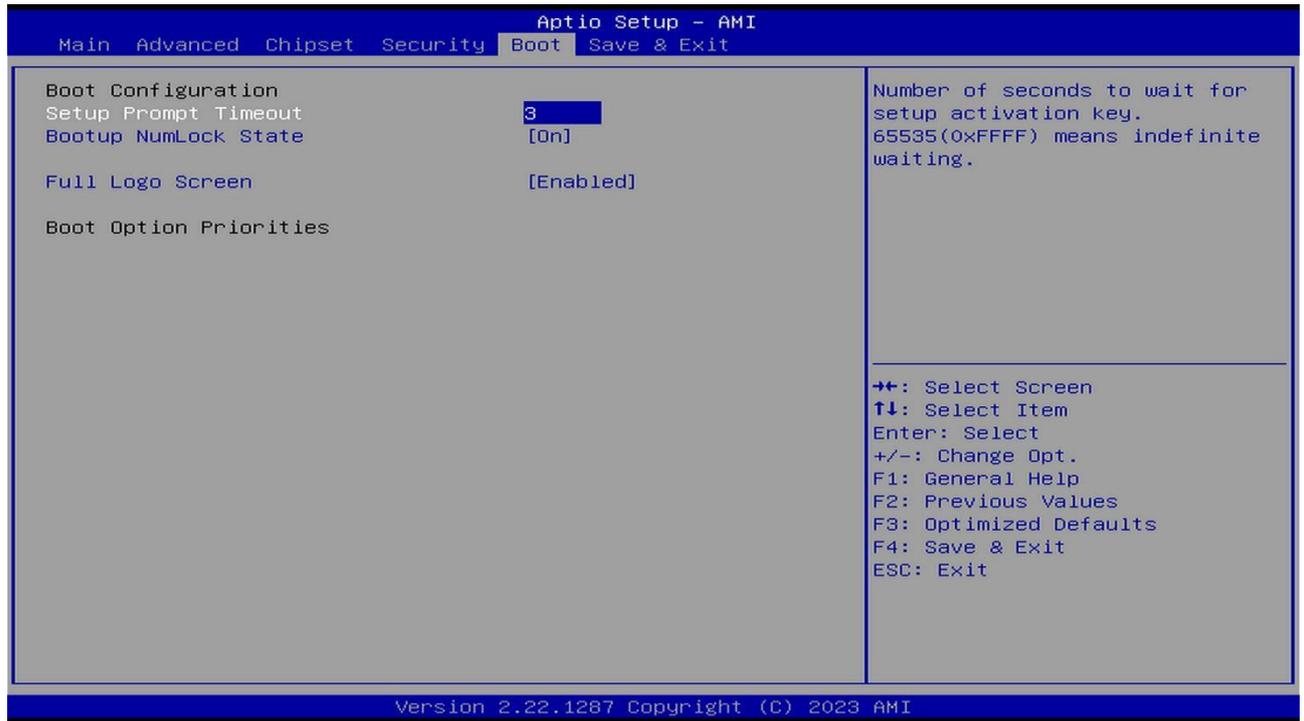
[Primary IGFX Boot Display] This option is used to set as the first display.

[Secondary IGFX Boot Display] This option is used to set as the second display.

## Security Settings



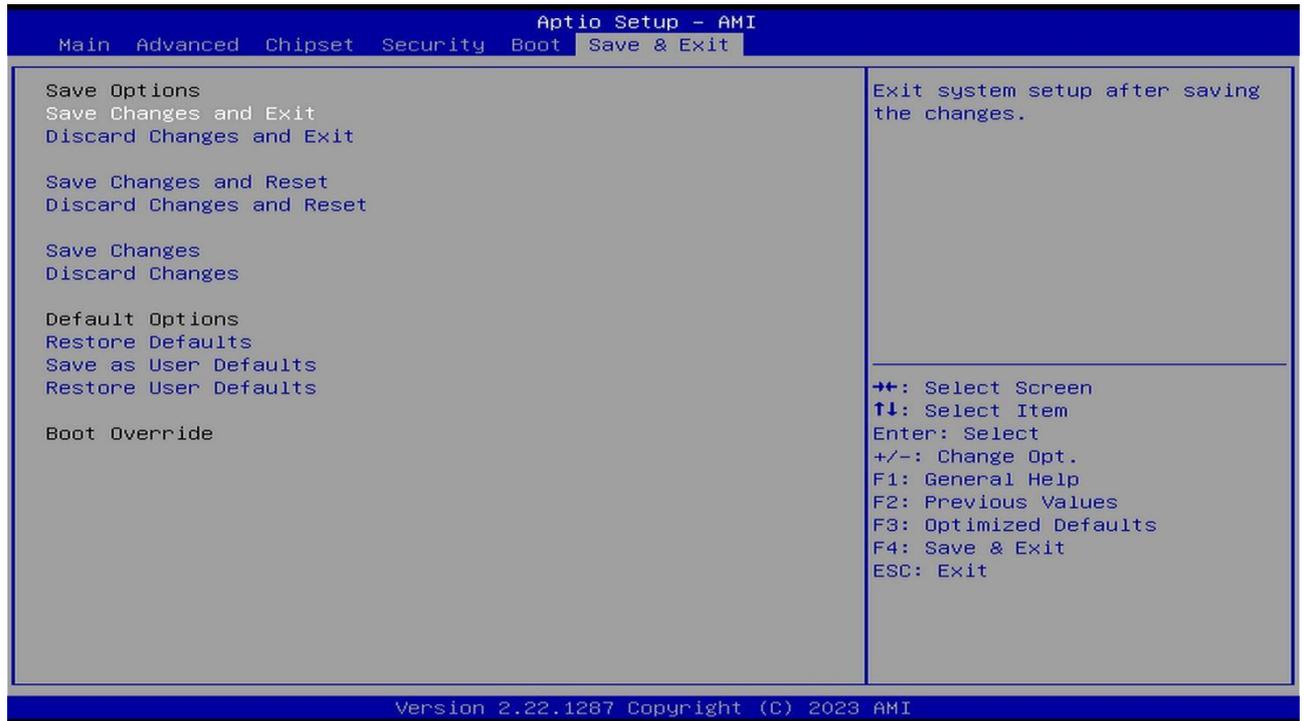
## Boot Settings



[Setup Prompt Timeout] This option is used to set the length of time the POST interface stays on.

[Bootup Numlock State] This option is used to set the state of Numlock after the system starts. When set to On, NumLock will be turned on after the system starts, and the numeric keys on the keypad will be valid. When set to Off, Numlock will be turned off after the system starts, and the direction keys on the keypad will be valid.

## Save&Exit Settings



## Common fault analysis and solutions

Error	Inspection Method
Unable to start after power on	<p>Make sure the power cord is properly connected.</p> <p>Make sure that the power supply you are using meets the power supply requirements of the motherboard.</p> <p>Try to reinsert the Memory Stick.</p> <p>Try to replace the Memory Stick.</p> <p>Try to clear the CMOS of the main board.</p> <p>Please confirm if there is an external expansion card and if it is normal after removing the external card.</p>
Unable to display after power on	<p>Make sure the monitor is turned on.</p> <p>Make sure the monitor and host power cables are properly connected. Make sure the monitor and host cables are properly connected.</p> <p>Check to see if the monitor is in "Sleep" mode.</p> <p>Try changing the monitor interface or replacing the monitor.</p>
BIOS Setup cannot be saved	<p>Check that the CMOS battery is installed</p> <p>Try to replace the CMOS battery (CR2032)</p> <p>Adjust the time and date in BIOS setup</p>
Unable to find a bootable device	<p>Make sure the drive's power and data cables are properly connected.</p> <p>Make sure the operating system is installed on the drive.</p> <p>Make sure the hard drive is not physically damaged.</p>
Blue screen or freeze when logging on to the system	<p>Check if the Memory Stick and External Card are loose.</p> <p>Try removing the newly installed hardware and uninstalling the newly installed driver or software.</p> <p>Try replacing the memory with a different specification.</p>
Slow entry into the operating system	<p>Check if the CPU cooling fan is running normally.</p> <p>Check if the remaining space of the system partition is insufficient.</p> <p>Use software to check for bad sectors on the hard drive.</p>
System restarts automatically	<p>Confirm that the CPU cooling fan is rotating normally.</p> <p>Confirm that the switch/reset button has not been accidentally touched.</p> <p>Confirm that the Memory Stick and external card are loose.</p> <p>Confirm that the power supply has sufficient load capacity, try to replace the power supply</p> <p>Check if the system is infected with viruses.</p>
Unable to detect USB device	<p>Confirm that the USB device requires separate power.</p> <p>Confirm that the USB interface has poor contact.</p> <p>Confirm that the USB controller is enabled in the BIOS setup.</p>